

AMENDMENT UNDER 37 C.F.R. § 1.111
Appln. No. 09/883,391
Docket No. Q64978

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A motor control device for a multi-phase motor, comprising:
a drive circuit for driving said multi-phase motor; and
a micro-controller for controlling said drive circuit in accordance with a phase current of the motor; said micro-controller including

a means for providing overheat protection, ~~including~~ having:

a motor current limit value calculating section for providing a motor current limit value that is an integrated value of a predetermined function of the phase current of the motor; and

wherein the motor current limit value obtained by the motor current limit value calculating section gradually decreases a peak voltage of a sine wave motor current with the passage of time~~a motor current limit section that limits a target value of the phase current in accordance with the motor current limit value.~~

2. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits a peak value of the phase current in accordance with an integrated value of a predetermined function of a phase current.

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3. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits the motor current in accordance with a maximum value of the given functional integrated values of the respective phase currents.

4. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits a d-axial current in accordance with an integrated value of a predetermined function of a phase current.

5. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits a q-axial current in accordance with an integrated value of a predetermined function of a phase current.

6. (previously presented): The motor control device as claimed in claim 1, wherein said micro-controller limits a current obtained by vector-synthesizing a d-axial current and a q-axial current in accordance with an integrated value of a predetermined function of a phase current.

7. (previously presented): The motor control device as claimed in claim 1, wherein said micro-controller does not change a phase angle formed by the q-axis and the current obtained by vector-synthesizing the d-axial current and the q-axial current before and after the motor current is limited.

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8. (previously presented): The motor control device as claimed in claim 1, wherein said micro-controller changes the phase angle formed by the q-axis and the current obtained by vector-synthesizing the d-axial current and the q-axial current before and after the motor current is limited.

9. (original): The motor control device as claimed in claim 8, wherein, after the motor current is limited, said micro-controller changes the phase angle formed by the q-axis and the current obtained by vector-synthesizing the d-axial current and the q-axial current so as to allow the d-axial current to flow in priority as compared with the state in which the motor current is not limited yet.

10. (original): The motor control device as claimed in claim 8, wherein, after the motor current is limited, said micro-controller changes the phase angle formed by the q-axis and the current obtained by vector-synthesizing the d-axial current and the q-axial current so as to allow the q-axial current to flow in priority as compared with the state in which the motor current is not limited yet.

11. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits the motor current in accordance with an integrated value of a power function of the phase current.

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12. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits the motor current in accordance with the integrated value of a deviation between the phase current and a predetermined threshold value.

13. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits the motor current in accordance with the integrated value of a deviation between the power function of the phase current and a predetermined threshold value.

14. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits the motor current in accordance with an integrated value of the power function of a deviation between the phase current and a predetermined threshold value.

15. (original): The motor control device as claimed in claim 11, wherein said micro-controller calculates the power function through polynomial approximation.

16. (original): The motor control device as claimed in claim 11, wherein said micro-controller calculates the power function with reference to a table.

17. (original): The motor control device as claimed in claim 1, wherein said micro-controller independently conducts the calculation in accordance with the phase current flowing direction.

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18. (original): The motor control device as claimed in claim 1, wherein said micro-controller conducts the calculation in accordance with an absolute value of the phase current.

19. (original): The motor control device as claimed in claim 1, wherein said micro-controller conducts the calculation in accordance with a detected value of the phase current.

20. (previously presented): The motor control device as claimed in claim 1, wherein said micro-controller conducts the calculation in accordance with the target value of the phase current.